AMENDMENTS TO THE CLAIMS

Claims 1 and 7 have been amended herein. All of the pending claims 1, 2, 4, 6, 7, 10-16, 18, 20-24 and 43-49 are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

Listing of Claims:

1. (Currently Amended) A method of conferring resistance to protoporphyrinogen oxidase-inhibiting herbicides upon plants or plant cells, comprising introducing a DNA fragment or a plasmid containing the DNA fragment into plants or plant cells or algal cells, wherein said DNA fragment has the following characteristics:

(1) said DNA fragment is 2.6 to 13.8 kb in length;

(2) said DNA fragment has a sequence that can be detected and isolated by DNA-DNA or DNA-RNA hybridization to a nucleic acid sequence that is complementary to a nucleotide sequence encoding the amino acid sequence of SEQ ID NO:1, wherein said DNA-DNA or DNA-RNA hybridization occurs under 2X PIPES buffer, 50% deionized formamide, 0.5% (w/v) SDS, 500μg/ml denatured sonicated salmon sperm DNA at 42°C overnight; and said DNA fragment remains hybridized after washing in 2X SSC, 1% (w/v) SDS, wherein said sequence encodes an amino acid sequence ~~in which~~ wherein the amino acid at ~~the position corresponding~~ position 13 of SEQ ID NO:1 is an amino acid other than valine; and

(3) said DNA fragment has an ability to confer resistance to protoporphyrinogen oxidase-inhibiting herbicides in plant or algal cells when introduced therein.

2. (Previously Presented) The method according to claim 1, wherein the plant is a dicot.

3. (Cancelled).

4. (Previously Presented) The method according to claim 1, wherein the plant is a monocot.

5. (Cancelled).

6. (Previously Presented) The method according to claim 1, wherein the plant is the green algae *Chlamydomonas*.

7. (Currently Amended) The method according to ~~any one of claims~~ claim 1~~, 2, 4, 6, 43, 44, 45 or 46~~, wherein the amino acid at the position corresponding to position 13 of SEQ ID NO:1 is ~~replaced by~~ methionine.

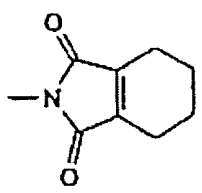
8-9. (Cancelled).

10. (Previously Presented) A plant or plant cells or green alga upon which resistance is conferred by the method described in any one of claims 1, 2, 4, 6, 7, 43, 44, 45 or 46.

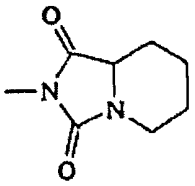
11. (Previously Presented) A method of selecting plant or algal cells upon which resistance to protoporphyrinogen-inhibiting herbicides is conferred, which comprises treating a population of plant or algal cells, upon which resistance to protoporphyrinogen-inhibiting herbicides is conferred by the method as described in any one of claims 1, 2, 4, 6, 7, 43, 44, 45 or 46, with a protoporphyrinogen-inhibiting herbicide in an amount which normally blocks growth of said plant or algal cells expressing only herbicide-sensitive protoporphyrinogen oxidase.

12. (Previously Presented) A method of controlling plants lacking resistance to protoporphyrinogen-inhibiting herbicides in cultivating fields of crop plants upon which resistance to protoporphyrinogen-inhibiting herbicides is conferred by the method as described in any one of claims 1, 2, 4, 6, 7, 43, 44, 45 or 46, which comprises applying to said field at least one protoporphyrinogen-inhibiting herbicide in effective amounts to inhibit growth of said plants lacking resistance to protoporphyrinogen-inhibiting herbicides.

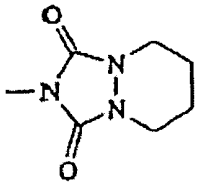
13. (Previously Presented) The method of controlling plants lacking resistance to protoporphyrinogen-inhibiting herbicides according to claim 12, wherein the protoporphyrinogen-inhibiting herbicides to be applied are selected from the group of compounds of the formula X-Q, wherein Q is selected from the group consisting of:



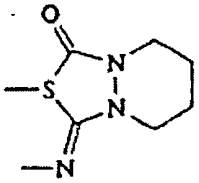
(Formula 1)



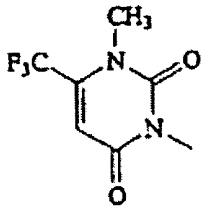
(Formula 2)



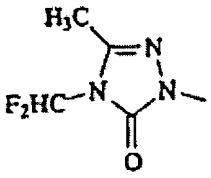
(Formula 3)



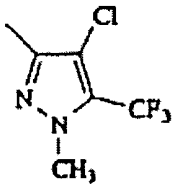
(Formula 4)



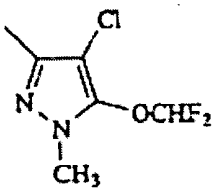
(Formula 5)



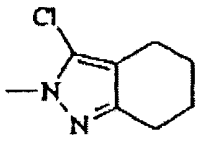
(Formula 6)



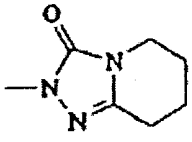
(Formula 7)



(Formula 8)

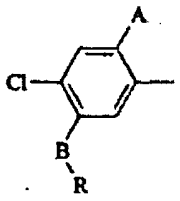


and



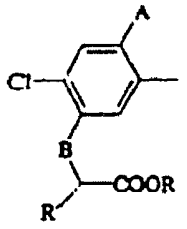
(Formula 9) (Formula 10)

and X is selected from the group consisting of



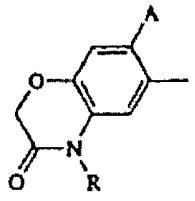
wherein
A = H, halogen
B = O, S
R = C_1-C_8 alkyl,
C_3-C_8 alkenyl,
C_3-C_8 alkynyl

(Formula 11)



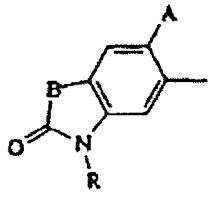
wherein
A = H, halogen
B = O, S
R' = H, CH_3
R = C_1-C_8 alkyl
C_3-C_8 alkenyl
C_3- C_8 alkynyl

(Formula 12)



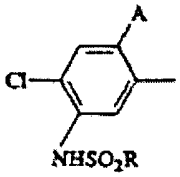
wherein
A = H, halogen
R = C_1-C_8 alkyl,
C_3-C_8 alkenyl,
C_3-C_8 alkynyl

(Formula 13)



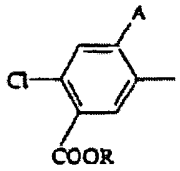
wherein
A = H, halogen
B = O, S
R = C_1-C_8 alkyl,
C_3-C_8 alkenyl,
C_3-C_8 alkynyl

(Formula 14)



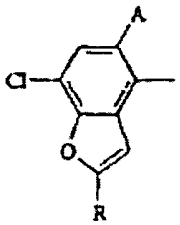
wherein
A = H, halogen
R = C_1-C_8 alkyl,
C_3-C_8 alkenyl,
C_3-C_8 alkynyl

(Formula 15)



wherein
A = H, halogen
R = C_1-C_8 alkyl,
C_3-C_8 alkenyl,
C_3-C_8 alkynyl

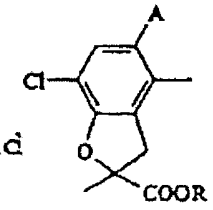
(Formula 16)



wherein
A = H, halogen
R = C_1-C_8 alkyl,
C_3-C_8 alkenyl,
C_3-C_8 alkynyl

(Formula 17)

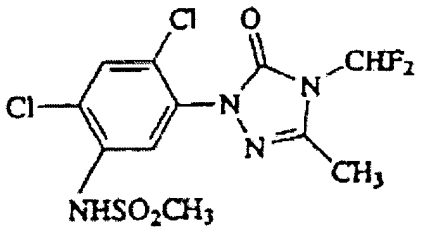
and



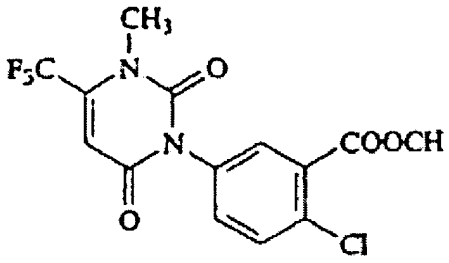
wherein
A = H, halogen
R = C_1-C_8 alkyl,
C_3-C_8 alkenyl,
C_3-C_8 alkynyl

(Formula 18)

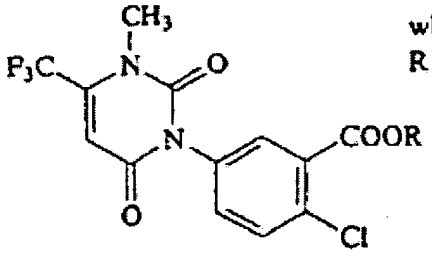
14. (Previously Presented) The method of controlling plants lacking resistance to protoporphyrinogen-inhibiting herbicides according to claim 12, wherein the protoporphyrinogen-inhibiting herbicide to be applied is selected from the group consisting of the compounds of the formula:



(Formula 19)

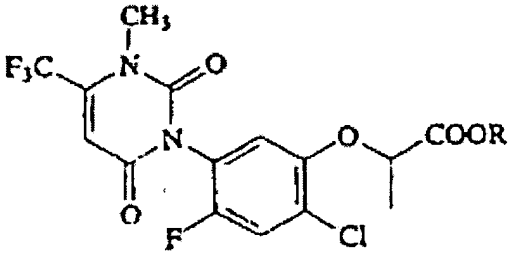


(Formula 20)



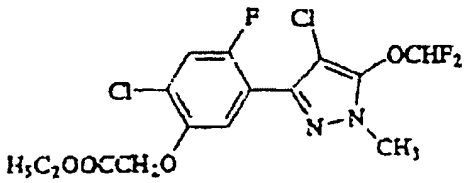
wherein
R = (C_2-C_5 alkenyloxy) C_1-C_4 alkyl

(Formula 21)



wherein
R = C_1-C_8 alkyl,
C_3-C_8 alkenyl,
C_3-C_8 alkynyl

(Formula 22)



(Formula 23)

lactofen,

[N-(4-chloro-2-fluoro-5-propargyloxy)phenyl-3,4,5,6-tetrahydrophthalimide,

pentyl[2-chloro-5-(cyclohex-1-ene-1,2-dicarboximido)-4-fluorophenoxy]acetate,

7-fluoro-6-[(3,4,5,6,-tetrahydro)phthalimido]-4-(2-propynyl)-1,4-benzoxazin-3(2H)-one,

6-[(3,4,5,6-tetrahydro)phthalimido]-4-(2-propynyl)-1,4-benzoxazin-3(2H)-one,

2-[7-fluoro-3-oxo-4-(2-propynyl)-3,4-dihydro-2H-1,4-benzoxazin-6-yl]perhydroimidazo[1,5-a]pyridine-1,3-dione,

2-[(4-chloro-2-fluoro-5-propargyloxy)phenyl] perhydro-1H-1,2,4-triazolo-[1,2-a]pyridazine-1,3-dione,

2-[7-fluoro-3-oxo-4-(2-propynyl)-3,4-dihydro-2H-1,4-benzoxazin-6-yl]5,6,7,8-1,2,4-triazolo[4,3-a]pyridine-3H-one,

2-[3-oxo-4-(2-propynyl)-3,4-dihydro-2H-1,4-benzoxazin-6-yl]-1-methyl-6-trifluoromethyl-2,4(1H,3H)-pyrimidinedione,

2-[6-fluoro-2-oxo-3-(2-propynyl)-2,3-dihydrobenzthiazol-5-yl]-3,4,5,6-tetrahydrophthalimide, and

1-amino-2-[3-oxo-4-(2-propynyl)-3,4-dihydro-2H-1,4-benzoxazin-6-yl]-6-tri-fluoromethyl-2,4(1H,3H)-pyrimidinedione.

15. (Previously Presented) An isolated DNA fragment which has the following characteristics:

(1) said DNA fragment is 2.6 to 13.8 kb in length;

(2) said DNA fragment has a sequence that can be detected and isolated by DNA-DNA or DNA-RNA hybridization to a nucleic acid sequence that is complementary to a nucleotide sequence encoding the amino acid sequence of SEQ ID NO:1, wherein said DNA-DNA or DNA-RNA hybridization occurs under 2X PIPES buffer, 50% deionized formamide, 0.5% (w/v) SDS, 500μg/ml denatured sonicated salmon sperm DNA at 42°C overnight; and said DNA fragment or its complement remains hybridized after washing in 2X SSC, 1% (w/v) SDS, wherein said sequence encodes an amino acid sequence in which the amino acid at the position corresponding to position 13 of SEQ ID NO:1 is an amino acid other than valine; and

(3) said DNA fragment has an ability to confer resistance to protoporphyrinogen oxidase-inhibiting herbicides in plant or algal cells when introduced therein.

16. (Previously Presented) The isolated DNA fragment according to claim 15, wherein the plant is a dicot.

17. (Cancelled).

18. (Previously Presented) The isolated DNA fragment according to claim 15, wherein the plant is a monocot.

19. (Cancelled).

20. (Previously Presented) The isolated DNA fragment according to claim 15, wherein the plant is the green alga Chlamydomonas.

21. (Previously Presented) The isolated DNA fragment according to any of claims 15, 16, 18, 20 and 47, wherein said amino acid other than valine is methionine.

22. (Previously Presented) The isolated DNA fragment according to claim 20, wherein the DNA fragment is isolated from genomic DNA of *Chlamydomonas*, and a nucleotide corresponding to position 37 (G37) of SEQ ID NO:4 is a nucleotide other than guanine.

23. (Previously Presented) The isolated DNA fragment according to claim 22, wherein said nucleotide other than guanine is adenine.

24. (Previously Presented) A plasmid comprising the DNA fragment described in claim 15.

25-42. (Cancelled).

43. (Previously Presented) The method of conferring resistance to protoporphyrinogen oxidase-inhibiting herbicides upon plants or plant cells or algal cells of claim 1, wherein said DNA fragment is 2.6 to 3.4 kb in length.

44. (Previously Presented) The method of conferring resistance to protoporphyrinogen oxidase-inhibiting herbicides upon plants or plant cells or algal cells of claim 1, wherein said DNA fragment is 2.6 to 10.0 kb in length.

45. (Previously Presented) The method of conferring resistance to protoporphyrinogen oxidase-inhibiting herbicides upon plants or plant cells or algal cells of claim 1, wherein said DNA fragment is obtained from a genomic DNA of a plant, a plant cell or an algal cell.

46. (Previously Presented) The method of conferring resistance to protoporphyrinogen oxidase-inhibiting herbicides upon plants or plant cells or algal cells of claim 1, wherein said DNA fragment is obtained from an algal cell.

47. (Previously Presented) The isolated DNA fragment according to claim 15, wherein said DNA fragment is 2.6 kb in length.

48. (Previously Presented) A method of conferring resistance to protoporphyrinogen oxidase-inhibiting herbicides upon plants or plant cells, comprising introducing a DNA fragment or a plasmid containing the DNA fragment into plants or plant cells or algal cells, wherein said DNA fragment has the following characteristics:

(1) said DNA fragment is 2.6 to 13.8 kb in length;

(2) said DNA fragment has a sequence that can be detected and isolated by DNA-DNA or DNA-RNA hybridization to a nucleic acid sequence that is complementary to a nucleotide sequence encoding the amino acid sequence of SEQ ID NO:1, wherein said DNA-DNA or DNA-RNA hybridization occurs under 2X PIPES buffer, 50% deionized formamide, 0.5% (w/v) SDS, 500μg/ml denatured sonicated salmon sperm DNA at 42°C overnight; and said DNA fragment remains hybridized after washing in 0.2X SSC, 0.1% (w/v) SDS at 68°C, wherein said sequence encodes an amino acid sequence in which the amino acid at the position corresponding position 13 of SEQ ID NO:1 is an amino acid other than valine; and

(3) said DNA fragment has an ability to confer resistance to protoporphyrinogen oxidase-inhibiting herbicides in plant or algal cells when introduced therein.

49. (Previously Presented) A method of conferring resistance to protoporphyrinogen oxidase-inhibiting herbicides upon plants or plant cells, comprising introducing a DNA fragment or a plasmid containing the DNA fragment into plants or plant cells or algal cells, wherein said DNA fragment has the following characteristics:

(1) said DNA fragment is 2.6 to 13.8 kb in length;

(2) said DNA fragment has a sequence that can be detected and isolated by DNA-DNA or DNA-RNA hybridization to a nucleic acid sequence that is complementary to a nucleotide sequence of SEQ ID NO:4, wherein said DNA-DNA or DNA-RNA hybridization occurs under 2X PIPES buffer, 50% deionized formamide, 0.5% (w/v) SDS, 500μg/ml denatured sonicated salmon sperm DNA at 42°C overnight; and said DNA fragment remains hybridized after washing in 0.2X SSC, 0.1% (w/v) SDS at 68°C, wherein said sequence encodes an amino acid sequence in which the amino acid at the position corresponding position 13 of SEQ ID NO:1 is an amino acid other than valine; and

(3) said DNA fragment has an ability to confer resistance to protoporphyrinogen oxidase-inhibiting herbicides in plant or algal cells when introduced therein.